ABSTRACT

Provided is a method for operating a water-gas shift reactor that extends the useful operating life of copper-based catalysts contained therein. Methods of the invention are especially useful, for example, in operating water-gas shift reactors that are subject to frequent cycles of startups and shutdowns.

In another aspect, the invention relates to a copper-based catalyst, which is useful, among other thing for catalyzing the water-gas shift reaction. The catalyst contains from 5 to 20 wt.% of a copper component, wherein at least 50 wt.% of the copper component is in the form of a copper oxide, aluminum oxide spinel; at least 75 wt.% of alumina; and from 0.03 to 1 wt.% of carbonaceous residue.